

摘要

相關於都市人群模擬的研究中，大部分的主軸都是朝向提高電腦圖像的即時效能，相對於討論行人在互動過程中行為的決策程序著墨就比較少，因此所產生的行為模擬與印象中具有智慧及真實性的代理人將會有一段距離。一些研究已經在討論代理人如何產生適切行為的過程，或者是藉由架構在個案研究與以情緒為基礎的方法來完成事件行為的回應。

在我們的研究中，這些方式來產生具有智慧的代理人是還有成長空間，儘管代理人行為的複雜度以及電腦執行即時圖像時的效率是呈現反比關係。代理人應該包含確切的能力來選擇最適合的決策來面對環境，而不是以既定程序方法完成；同時也應該具有學習多樣化推理的能力，包括對於情勢的評估、計畫、既定目標失敗的反應...等等。

本研究將針對虛擬環境中互動式代理人進行架構上的實作，使該虛擬代理人能夠與虛擬的城市環境互動，並類似於真實人類的行為。本研究的目的為結合影響人類行為的情緒與記憶因素，使虛擬代理人對應於虛擬世界的環境時能具有更多元實際的行為模式。記憶以及情緒是代理人在處理決策過程中提供影響或修正的評估平台，因此，我們的研究將討論記憶與情緒機制如何與決策過程產生連結，進而產生適應性的行為能力及簡單的學習過程來面對環境中不同的事件。

關鍵字：代理人、適應性行為、人機互動、記憶機制、情緒評估

Abstract

There are many researches focus on combining physical and digital cities to create a complex virtual environment with human inhabitants, which behave as we would expect real humans to behave. Most of the simulations are dealing with pedestrians interaction, route analysis, collision detection, or event-driven random behavior. However, many of projects focused on the computer graphical rendering aspects rather than on the behavior or decision making process of the pedestrian, therefore the simulation would be far from giving the impression of intelligent agent and less realistic. In some papers have focused on pedestrian's generation process of behavior or animation, dealing with case-study or emotional-based approach to complete all reactions by surrounding environment.

In our point of view, these methods are not enough for making a intelligent pedestrian, although the efficiency of real-time frame rate and the complex of agent are inverse proportion. Pedestrian should have the ability to truly determine most appropriate decision to react different conditions, not only making responds in procedure. The intelligent agents must exercise a variety of reasoning capabilities, including situation assessment, planning, reacting to goal failures.

This paper describes the implementation of a framework for building complex agent that is capable of interacting with virtual city environments in ways that are similar to individual human. In our opinion, memory and emotions are essentially as evaluation platform that influence or modify decision processes of an agent. Therefore, our work explicitly specified the relationships how memory mechanism affected cognition with emotions, generating adaptive behaviors and prime learning ability to face variant events in virtual world.

Keywords: agent, adaptive behavior, human-computer interaction, memory mechanism, emotional appraisal